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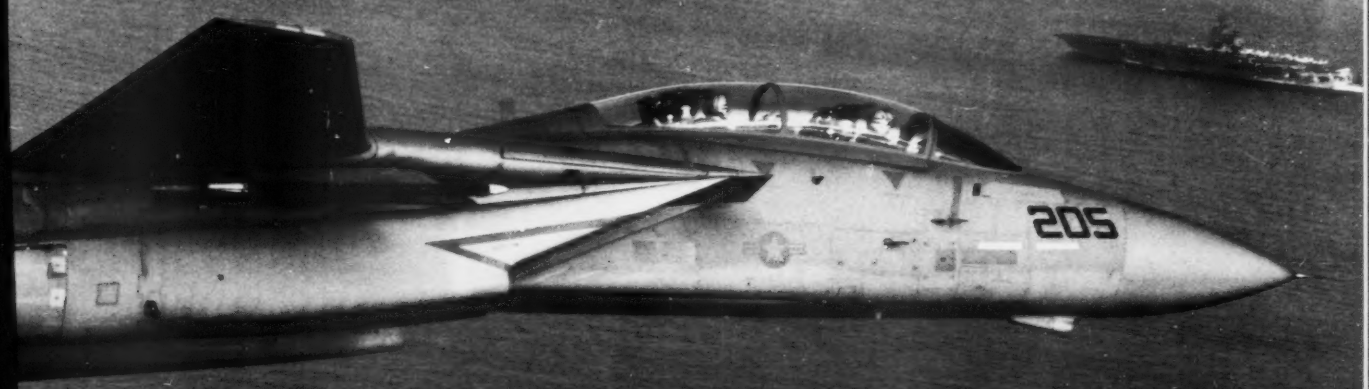

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The Safety Center at a Glance

Part II in a Series. *The Aviation Programs Directorate* is responsible for promoting, monitoring and evaluating the Naval Aviation Safety Program. It is comprised of four divisions: Air Operations, Maintenance and Material, Aircraft Mishap Investigation and Aeromedical. This article will highlight the Maintenance and Material (M & M) Division.

The M & M Division promotes aviation safety primarily through the bimonthly publication of Mech magazine, live maintenance safety presentations and safety surveys. Mech is distributed to all Navy and Marine aviation activities, sister military services, many allied countries and to civilian aviation activities. It presents new technological developments, current fleet examples of both mishaps and improved safety practices, plus other safety-related maintenance and material articles of a general nature. The Crossfeed insert emphasizes specific safety-related maintenance and material items primarily discovered by M & M personnel through fleet liaison and safety surveys plus their close working relationships with Naval Air Systems Command, Naval Air Engineering Center, Naval Air Development Center, all cognizant field activities and civilian contractors. It relies heavily on input from throughout the naval aviation community and provides an excellent forum for new ideas and developments in aviation safety. M & M personnel are available upon request to give live maintenance safety presentations of a general nature, such as the maintenance malpractice presentation or specific safety presentations on specific topics. These presentations have been well received by the fleet and are often used to supplement a command safety stand-down or safety/maintenance symposiums.

The safety pulse of aviation maintenance is continuously monitored and evaluated by a combination of on-site visits and analysis of statistical data and reports by the various branches in the M & M division. The most visible activity is the maintenance safety survey. These are conducted by a team of approximately 12 maintenance specialists who spend one full working day with a squadron, intermediate maintenance activity or air rework facility. Working from a standardized safety checklist, all aspects of each work center's operation are evaluated and any discrepancies are noted and discussed in detail with each supervisor. Briefs are also given to the division and department level and an overall brief is given to the commanding officer. Results are never passed to seniors in command, but remain solely within the activity.

The Quality Assurance Branch reviews all aircraft mishap reports, quality deficiency/safety reports, engineering investigations and other applicable data. This branch has on-line computer access to many maintenance data bases and provides statistical information to any command upon request.

The Aviation Life Support Equipment Branch is involved with all aspects of aircrew equipment and cryogenic systems.

The Support Equipment Branch works closely with Air Systems Command, the Aviation Center and the Air Engineering Center and various commercial activities to ensure support equipment safety items are incorporated. It provides an open line of communication with these commands and the fleet.

The Aircraft Maintenance Branches (Avionics, Airframes and Power Plants) monitor all incoming reports and review statistical data pertaining to their specialty. In addition, all personnel are assigned to monitor specific aircraft types and models. Maintaining a close working relationship with the fleet and supporting activities, they take an active role to ensure that timely and definitive action is taken to prevent mishap recurrence. They also monitor efforts to improve unsatisfactory material or procedural conditions. Designated personnel represent the Safety Center at various conferences dealing with all aspects of aircraft maintenance. They monitor all technical information (bulletins, changes, engineering proposals, technical publications changes, training plans, etc.) pertaining to each level of aircraft maintenance and related equipment.

The Maintenance and Material Division provides continuous technical assistance to all other sections in the Safety Center and upon request to outside activities. For additional information, please telephone Autovon 564-3494 or commercial (804) 444-3494.

inside approach

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F-14A Tomcat of VF-103 approaches USS *Saratoga* (CV-60) in the Mediterranean (VF-103 Photo)

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Capt. J.P. Smith, Chief of Staff
Capt. E.K. Andrews, Director, Aviation Safety Programs
Cdr. C.E. McCaskill, Head, Safety Publications
Lt. John M. Flynn, Editor

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The Morning After

By Lcdr. Paul Miles

Editor's note: Although fiction, this story is based on three actual F-14 mishaps which occurred recently.

The obvious sign was there for anyone to see: the Fresnel lens was tilted up at a crazy angle with the top cell and the cut lights missing. The windbreak forward of the lens had been chewed up too. But the thing that really caught my eye that morning — the morning after — as sailors worked to clean up the debris, was the F-14 mainmount lying in the port catwalk up near the end of the angle-deck. You could see a mark that ran for a hundred feet along the catwalk itself where the wheel had tried to penetrate the metal. Finally, it had been peeled off the airplane. And there it sat with everyone not quite sure whether to move it or leave it alone.

The CATCC watch had become something of a routine here in the Indian Ocean, in the summer of 1983. Visibility was rarely more than two miles, so we were doing Case III IFR recoveries day and night. That meant that those of us on our second tour were spending a lot of time down in CATCC, making sure our pals were kept out of trouble. In the daytime it wasn't so bad, although the deck was pitching and that caused a bolter or wave-off periodically. At night, though, it was showtime, and our F-14s were right up there in the limelight. With missiles, we were getting our first look at the deck with about 5.8 on the fuel (5,800 pounds), and it was averaging 60 percent that you'd get to land on the first pass. So as I walked into CATCC and took my spot on the sofa, I was mentally ready for an exciting night. Little did I know.

I watched them launch 100 and 103 at about an hour after sunset, and then I began concentrating on the recovery. In the middle of things, 100 called up on departure and asked to speak to a rep. That was me.

"One hundred, rep. This is Scotty. Go ahead."

"Yeah, Scott, we just lost our right generator, and it won't reset."

"OK . . . how does the bus-tie look?"

"It looks good. We have no other problems, and we intend to stay out for the full cycle. Just thought I'd let you know."

"OK, no big deal. See you on deck."

One hundred was being flown by "Skeet" Wilson and "J.R." Ewing. Skeet, the pilot, was first tour, but had a cruise and about 800 F-14 hours. He knew the airplane as well as any of us, and flew it better than most. He was a friend of mine. J.R., of course, was a nugget and a good one. No problem. I made a mental note to tell maintenance about the generator, but otherwise dismissed 100 from my mind.

I'd just caught our second jet (after a bolter), when the Air Ops Officer got a call from Combat.

"Air Ops, Combat. One hundred has lost his left engine, and is returning as an emergency."

Holy Smoke! I could kick myself! I'd let him stay out! I could have told him to come on back! *Now he'll be doing a single-engine at night to a pitching deck. Thank God it's Skeet.* Those were my first thoughts. Then I realized I had some work to do. I called the ready room to have them inform the CO. Then I pulled out the NATOPS Manual, Pocket Checklist and our own Pri-fly/CATCC Guide.

Finally, 100 was switched to frequency on which I could talk to him. He was 100 miles out.

"Center, 100. We're up waiting for our rep."

"Roger 100, this is your rep. Tell me what you've got."

"OK . . . we just started losing RPM on the left motor. It went down through 40 percent, so I shut the throttle off and tried a restart. Nothing happened . . . no light-off."

"Did you have fuel flow?"

"Negative. We also got a fuel pressure light as the RPM was winding down. I don't know if that has anything to do with it."

"Roger you still have your right generator problem?"

That's affirm. We're on the emergency generator now. Bi-di pump is working, so combined pressure is 2,600 psi."

OK, what's your state?"

"Right now I've got 15.0. The drops are empty. My max trap is 5.8."

Continued

B Rade

"OK, we're getting ready down here."

Meanwhile, Air Ops was in conference with the bridge. The Captain wanted to know whether to try and divert 100 to a shore base. Diego Garcia was 1,600 miles away. Masirah, Oman might be available at 300 miles. That would require diplomatic clearance. My skipper arrived during that discussion. Our sister squadron had had a day single-engine two weeks ago, and it had been no sweat. Besides, Skeet was flying. We would take him.

"One hundred, rep."

"Go ahead."

"Yeah, we've decided to take you aboard. I'd like you to go through the single-engine, combined hydraulic pressure low, and dual generator failure checklists for me, and report them complete."

"Roger, that. Oh...I'm getting a bit of fuel split here. The left tape is full, and the left wing has about 1,800 pounds. The right tape is at 5.9, and the right wing is empty."

"That's no problem. You can expect a fuel split while you're single-engine. You're only burning fuel out of the right side. You'll have to use the transfer switch to get that left-side fuel. When you decide to go for that fuel, just make sure you're in a level attitude, or it'll gravity-flow forward or aft on you."

"OK. I'll let this right side burn down some more before I do that. We're 88 miles out."

Aboard the ship we began getting our ducks in a row. We wanted a little more than minimum wind-over-deck, but not too much. Twenty-four knots was perfect. We told the controllers to set him up so he wouldn't need any big left turns (turns into the dead engine). We briefed the wing LSO — he was an A-7 guy, but had waved the single-engine two weeks ago — on the need for burner and rudder in the event of a bolter or waveoff, and that line-up would be a bear. The LSO went to a target two-wire, and rolled the lens down to the single-engine setting (due to the fast approach speed, reduced angle-of-attack, and reduced hook-to-eye distance). We were ready.

"One hundred, rep. You have a ready deck."

"Roger, I'm down to 13.0 now, and something screwy is going on with the fuel."

Thirteen point zero! How could he burn that much fuel in . . . how long? Five minutes?

"What have you got again?"

"We've got 13.0, which seems to be excessive consumption. My left tape reads 6.4, left wing is...the left wing is now full with 2.0! Right tape is 4.6. Right wing is empty."

"You say the left wing has increased?"

"That's affirm. I checked it before we went single-engine and it was down to about 1,400 pounds."

What the heck's going on here? "How far out are you now?" I said.

"We're at 52 miles."

"OK, you'd better try and get some of that fuel out of the left side. Go AFT on the transfer switch."

"OK. AFT selected."

The skipper was confused, and so was I. He'd never had a real single-engine himself. I'd had one at the field, but I'd landed immediately. Something wasn't right here. At least approach had radar contact now, and started vectoring him to final. With luck, this would be over in 10 minutes.

"Rep 100. I'm not getting any fuel out of the left side. Right side continues to go down. six point four on the left, 4.0 on the right. I'm going to start dumping now down to max trap."

I knew Skeet was doing the arithmetic with me. We had to get that fuel out of the left wing, or Skeet would only have 3.8 useable fuel for his landing. Also, what about lateral asymmetry? Two thousand pounds in the left wing was a lot and it was on the same side as the failed engine. Dumping would make room for that wing fuel in the fuselage. It would also open the motive flow isolation valve if that had failed . . . was that the problem? It didn't make sense. What if he dumped and then still couldn't get the left-side fuel to the engine.?

"One hundred, rep. Secure your dumps and read off your fuel gauge again."

"OK, dump's off. Left tape is 5,400. Left wings is 1,900. Right tape is 3,000. Total is 10.3."

"And you're still in AFT, correct?"

"That's affirm. Left wing is coming in, down to 1,800 now. Left tape is rising rapidly. Five point eight on it now. Right tape. 2.3. Something's not right here."

God, I thought, *he can't get the left side fuel to the engine. And he's only got 2,300 pounds useable!* I told Air Ops to send a tanker to 100 immediately. He agreed. I saw panic on the CO's face. Then I heard panic on the radio.

"OK, Scott . . . the left tape's back up to 6,400, the left wing is full again, and I'm down to 1.8 on the right tape! It's going down fast! *What do I do* ?"

Fuel is going from right to left, I thought. We've got to stop all paths it can take. He's got a windmilling engine. That's driving a motive flow pump and it's pumping fuel out into the left wing and aft fuselage. But the left engine isn't burning it — so it just piles up. Also, the crossfeed valve is taking boosted fuel from the right side and sending it to the dead left engine! With AFT selected, right side motive flow is going to the left side as well!

"One hundred, rep. Pull your left fuel shutoff handle. Reselect normal transfer. Turn wing transfer off."

"Roger!"

Now, how to isolate the right fuel system?

"One hundred, pull the fuel feed and dump circuit breaker by your right knee, and tell me your right side state."

"Done. I have 1,200 pounds in the right feed and tape, and I have a right fuel low light."

"OK. The tankers coming your way with six to give. You have 1,200 pounds of useable fuel on board! Use fuselage only when you tank."

"Roger, a vector please."

Night tanking...single-engine. The minutes began to stretch toward eternity. *Their radar won't work on the emergency generator. Twenty miles apart. Ten miles. Clouds.*

"One hundred's Tally-ho"

"Tanker's no joy."

"I'm at your left nine. Come easy left."

"No tally."

"I'm joining."

"We don't see you."

He has no external lights on the emergency generator! What's his state? The CO's a basket case. So was I.

"I'm aboard! Put your basket out!"

"You've got no lights, 100."

"I'm aboard. My state is 500 pounds!"

"Cleared in."

"Give me a couple of percent."

I've never tanked single-engine. *Does he have enough power?*

Sure . . . the tanker's only doing 250 knots, the jet'll do that easy single-engine...but...not with the wings back!

"One hundred, rep. It may be easier if you leave the wings in AUTO."

I hoped that Skeet had tanked that way before. I imagined what must be going on in that cockpit. I heard Air Ops vector the helo in their direction.

"One hundred is plugged and receiving."

The CO turned away and sat down.

There was a moment of relief, but no real rest for me, because now I had to figure out how to get 100 aboard. The tanker would leave him with 5,000 pounds or so of fuel, all in the right side, because the left side was already full. But there was now 8,400 pounds trapped in the left, which was more fuel than 100 could legally land with on the ship. By the pocket checklist, 5,000 pounds was also not enough to go 300 miles single-engine to Masirah, diplomatic clearance or not, especially with 8,000 pounds of liquid ballast aboard. We would have to dump fuel again. We would also have to put a million dollars worth of missiles into the Indian Ocean. Oh well. But how to dump fuel? The fuel feed and dump circuit breaker, which was isolating the two halves of the fuel system, inhibited dump. How else to stop motive flow to the left side? Ah, yes! Select transfer FORWARD! Could we get rid of the missiles on the emergency generator? Yes, all but the Sidewinder. And I had to tell Paddles about the external lights - the only ones that would work were the approach light and the probe light.

We calculated that with no missiles aboard (except the Sidewinder), max trap fuel was now 7.3. Of that, 2,000 pounds would be stuck in the left wing, leaving 5.3 in the fuselage. If we could get the right side up to 5.0 or so, we could dump both the left and right side down to 600 pounds above max trap, leaving about 3.6 on the left and 2.3 on the right. Using about 600 pounds out of the right for the approach would put us at max trap, with enough for one look, and then the barricade. The CO talked to the Captain, giving him my numbers, and they agreed, but decided they wanted 100 to be 200 pounds heavy at the ramp. No problem, I supposed. Max trap gross weight was 51,800 pounds, but the arresting gear guys always set 52,000 anyway. We had plenty of wind. It wasn't "legal," but it should work. I briefed Skeet. Everything had to go right.

Skeet came off the tanker with 6.0 in the right. The tanker had given him a thousand pounds more than his calculated "give." Skeet would be buying him beer whenever we got into port. Now we had a little breathing room. Maybe he'd have 2.5 useable for his first pass. That would mean an extra look if needed.

Should we reconsider diverting him with the extra gas?

"One hundred is turning in at 12 miles, descending out of angels five and going dirty."

Too late.

"Roger, 100. Final bearing 205. Fly heading 180. Descend and maintain angels 1.2."

"One hundred, roger."

"One hundred, Approach. Will you be able to reach 1.2 in approximately four nautical miles, or would you prefer a 360?"

"Ah yeah, Approach...we'll take a right 360 at this time. We lost our power there for a couple of seconds while dirtying up."

Continued

. . . A flash from the fresnel lens as the jet went by. Confetti everywhere — except it's metal confetti. Pieces of flap and horizontal tail exploded behind . . .

"One hundred, roger. Report steady, heading 180."

The hair began standing on the back of my neck. *A descending turn! A real naval aviation taboo!* But I was not on the radio any longer. It was up to Skeet and J.R. *What was that about a power loss?*

"One hundred, I show you at 13 DME, angels 1.2."

Silence.

"One hundred, I show you at angels point eight! Check your altitude!"

Panic.

"One hundred, Approach!"

Breathlessness.

"One hundred, Approach, Level off and climb!"

"Approach, 100 . . . We . . . got a little behind it there..."

"One hundred, when comfortable, take heading 170."

Relief. For a while.

"One hundred, are you receiving the ILS?"

"That's affirm."

"Roger, fly the ILS until ACLS lock on. Hold you at 10 miles. Confirm dirty."

"One hundred's dirty."

"Roger."

In CATCC, all eyes were either on a radar scope, or glued to the PLAT. All except the CO. His were closed.

"One hundred, ACLS lock on, 4 ½ miles. Say your mode II needles."

"Fly up, fly right."

"One hundred, concur, continue mode II."

I don't see him yet. Of course he has only an approach light.

"One hundred, Paddles."

Not now, Paddles! I thought.

"One hundred, go ahead."

"OK, Skeeter *(He hates Skeeter!).* We're gonna getcha. I want ya to be a little bit fast, but not too much or you'll hook skip."

"Roger."

"And I want ya to work a little low and flat so we keep lots of power on the jet. Don't get high on me."

What? You've gotta be kidding! My mind screamed. *Low? Never low!*

"And if we miss ya, go ahead and plug in that burner. Just give it lots of rudder, OK?"

"Yeah, sure."

Oh, Skeet! Don't pay any attention, buddy. Just fly it a half-a-ball high, as usual. There he is!

"One hundred, one mile. On course, slightly above glide path."

.Good!

"One hundred, drifting slightly left, right two. Slightly above glide path. Three-quarters of a mile, call the ball."

"One hundred, Tomcat ball, 2.4, single-engine."

"Roja ball Tomcat. You're looking good."

God, he's looking great!

"Just keep it coming down for me."

Don't touch anything, Skeet. Damn, the deck's starting to cycle!

Skeet was settling. I could feel it . . . and drifting right. Lineup had to be a nightmare. Every power correction meant a rudder correction.

"OK, don't settle. A little power."

Oh, he's low and going further right!

"Power and left for lineup."

And . . . his light's gone! He's gone—he just disappeared! No! Then I saw him. The low light camera on the PLAT had found his silhouette. Impossibly low and in about a 30-degree left angle-of-bank.

"Wave-off! Wave-off! Wave-off!"

I saw the burner igniter jet out of the right nozzle, and the burner plume begin to build. *He's got to get the wings level!* He was coming across the ramp about now, and it looked like he might make it, but he was going to port due to that wild angle-of-bank! Sparks flew as his hook hit the round-down. His left mainmount was rolling now, his right still in the air. As he disappeared off the right side of the screen, the PLAT switched from the deck to the island camera.

"Right! Right!" the LSO screamed.

A flash from the fresnel lens as the jet went by. Confetti everywhere . . . *except it's metal confetti.* Pieces of flap and

horizontal tail exploded behind 100. Now his burner had fully staged, and its brightness obscured all detail. But I'll never forget that sickening lurch as the port main landing gear fell into the port catwalk and tried to keep 100 from leaving the deck. I could not tell his attitude from the PLAT — whether he was upright or doing a slow roll into the water. I prayed for J.R. to eject himself and my friend.

J.R. will fly again. Eventually, so will Skeet, although it'll be a long, painful wait for him. Ejection trajectories, you know. They were lucky. And unlucky, of course. Why did it happen? Is there something I could have done?

You can Monday morning quarterback these things to death, and we (that means me) made several mistakes. You might look at everything that happened and at what our thinking was, and see how you would do it better.

Some major things deserve discussion, however, and you can bet they will be talked about in our ready room for a long time. There were essentially three things wrong with 100. Two were obvious, and one was hidden because it was a system we rarely use at sea: The left engine failed, the right generator was inop, and we think, the feed tank interconnect valve failed to open upon command. Each of these by itself is not sufficient to cause loss of an aircraft. Together, however, they gave us three major problems that caught us totally by surprise. One of them I solved, one of them Skeet managed to fly out of and one of them cost us a jet.

First, the feed tank interconnect valve is *the* valve that allows crossfeed fuel transfer when single-engine. While a fuel split during single-engine operation is normal, especially if you let an engine windmill and leave the fuel shutoff handle in, if the feed tank interconnect valve fails to operate when it's supposed to, you will pump fuel from the good-engine side to the inop-engine side via the motive flow system at up to 300 pounds per minute and *never be able to get it back*. In the summer of 1983, nobody in our squadron knew anything about this problem. Fortunately, new NATOPS procedures have recently been issued to handle single-engine fuel migration. Not everything is known about the problem, especially the ramifications of a failure where landing cannot be accomplished immediately, and more discussion and procedural changes will likely occur. Someone in each F-14 squadron must become a real expert on this part of the fuel system.

Second, we underestimated the effects of weight and lateral asymmetry on single-engine flight. Skeet almost lost it when he tried to level off in a turn using only basic engine. As their airspeed fell below 150 knots, with J.R. *screaming* in the back seat, Skeet had to go to Zone 2 afterburner to stop his descent. And he got as low as 600 feet and 135 knots! Remember that he was over 52,000 pounds gross weight, had 2,000 pounds in his left wing, and had the combined drag of his turn and an inoperative engine working against him. Take a look at the single-engine rate-of-climb charts for MIL power and see how much gravy you have to get out of a hole. On a hot day in the IO, your climb angle may be less than one degree! Also, someday when you're flying downwind, note the fuel flow required for level flight, dirty at 150 knots. It's usually about 3,300 pounds per hour per engine. If you're single-engine, it'll take *6,600* pounds per hour plus some extra for the added drag. Next time you run-'em-up on deck, see how much RPM it takes to get 7,000 pounds per hour of fuel flow — that'll be your level flight power setting for single-engine. As Skeet said afterward: "It was nothing at all like practicing at the field, with one at idle and light gross weight. I needed more power, more rudder . . . I felt like I had a drag chute on the jet . . . no similarity to the field at all." There's a new NATOPS procedures for single-engine landing out now, too.

The thing that finally got us was the emergency generator, being powered by the combined hydraulic system, in turn being powered through the Bi-di pump by the flight hydraulic system. It should have hit me when Skeet "lost power" on his dirty-up. The high demands on the combined system were more than the Bi-di and the flight system could handle. We also think that the flight side may have been slightly underserviced. When pressure dropped, the emergency generator dropped to the low side and Skeet lost a lot of things:

- Stability augmentation systems
- Electrical control of spoilers
- VDI/HUD
- *All* external lights
- All cockpit lights except red floodlights
- The backseat (main) radio

We think what happened in-close is that Skeet made a large lineup correction and got the spoiler up on the left wing. Then, the control demands kicked the emergency generator into low, and Skeet lost everything. He couldn't even hear the LSO because that was on the back-seat radio. He was left with inboard spoilers partially extended on the *already heavy* left wing, and reduced tail power to pick the wing back up. So he smacked into the lens and the catwalk and ended up being saved by his RIO and Martin-Baker.

The moral is that although we have a mature 14-year-old airplane on our hands and lots of experience around, there are still new and unforeseen problems waiting to bite us, and we may not know all there is to know about some of our "common" emergencies. I suppose that's true of any aircraft in the fleet. The only solution to the unforeseen problem is total, thorough systems knowledge . . . to let knowledge, headwork and analysis help you when experience by itself can't. Think about what happened to Skeet and J.R., and about what might happen to you. Brainstorm it in the ready room, and study for it in the books. Then maybe you'll be able to handle it on the night of, instead of the morning after.

Lcdr. Miles is an F-14A instructor pilot at VF-101 with 2,500 flight hours (2,000 in the F-14A). When he wrote the article, he was deployed with VF-102 aboard USS *America*.

Slight-of-Hand Trick. The Corsair had been positioned on the catapult and tensioned. The event was an engine Post-Maintenance Check Flight (PMCF), requiring longer than normal turnup time on the catapult in order to record engine parameter data. The catapult crew was unaware of the special requirements. A qualified cat officer and a cat officer under instruction watched as the final checks and run-ups were completed. Anticipating a ready-for-launch salute from the A-7 pilot, the cat officer under instruction saw the pilot raise his hands above the canopy rail in a gesture which he regarded as the salute. The cat officer swung his arm and dropped to the deck, giving the signal to launch the aircraft.

However, the pilot had not been ready and was not properly positioned. The plane had flying speed as it left the bow, but throttle was moved to the off position by the force of the cat shot and the pilot ejected. He was safely recovered.

What the cat officer had seen and interpreted as a salute was actually a gesture by the pilot meant to indicate that he was going to write aircraft engine data on his kneeboard, and thus was not ready for launch. Indeed, other individuals on deck, having a full side view of the cockpit, observed the pilot in a head forward position. Certainly the pilot's head was not in the appropriate launch position, i.e., head against headrest to indicate he was anticipating a launch.

A split second before the aircraft began to move, and after the cat officer had given the launch signal, he saw the Topside Safety Petty Officer (TSPO) give the suspend signal. By then it was too late and the A-7 was on its way.

It is unfortunate that the catapult crew had not been informed via voice communication or pre-launch brief of the Corsair's PMCF status requiring abnormal launch time. Unwittingly, the pilot compounded the situation by not giving more thought to how his above-the-rail gesture might be interpreted at this critical moment of the launch sequence. By the same token, had both cat officers made better inspection of the situation immediately prior to signalling launch, they might have seen that the pilot was, in fact, not properly positioned, and suspended the launch themselves. Many lessons can be relearned as a result of this mishap. — Ed.

Seaknight Shimmy. The four CH-46Es had been on a transcontinental flight, stopping at a southern Air Force Base. They eventually took off on the next leg of their flight. As the formation lifted off, Dash 4 developed a severe lateral vibration which showed up as a torsional oscillation in the cockpit. The oscillations were severe enough to throw the crew chief and mechanic out of their seats. (They were wearing gunner's belts, instead of their seat belts.)

The HAC directed the co-pilot to turn off the stability augmentation system (SAS). The HAC applied full right pedal, and the oscillations quickly decreased. The aircraft landed without further incident and returned to the transient parking area.

After shutdown, the SAS links were checked but no discrepancies were found. Time from liftoff and the onset of oscillations and the initiation of immediate emergency procedures was approximately five

AIR BREAKS

seconds. Three more seconds covered the dampening of the oscillations prior to landing.

Heads up! This is the third reported instance of an H-46 entering violent divergent oscillations/torsional oscillations/severe lateral vibration in a one-month period. In each case, the immediate correct response by the pilot and co-pilot with newly prescribed NATOPS emergency procedures made the difference between sweaty palms and a broken airframe. Don't be the one to be caught with your guard down. — Ed.

Make Mine JP-5, Straight! The Pacific base had experienced a 24-hour period of heavy winds and rain. On the morning after the rain, a fuel truck refueled a visiting P-3, and then returned to the fuel farm to be replenished. The truck subsequently fueled two HH-46s later in the day during additional heavy winds and rain. Both HH-46s were scheduled to fly the next day. Helo number one for a post-maintenance check flight and helo number two to perform at-sea shipboard operations.

After the early morning check flight, the plane captain of helo number one, while performing a turnaround inspection, discovered visual water contamination of the aircraft fuel system and reported it to maintenance control. Maintenance control alerted the base fuel farm and requested that the suspect truck be checked. Fuel samples from the truck's tank revealed water, but within fuel truck allowable tolerances (5 PPM).

Helo number two, engaged in shipboard operations, was recalled, defueled and samples taken. Although having received an additional 700 pounds of JP-5 from the ship, the sample results indicated some water contamination present. Both helicopters' fuel filters were contaminated, but the fuel contamination indicator buttons had not extended. The static engine fuel filters revealed no contamination. The P-3 fuel system was also checked and found to be unaffected.

The fuel truck had a fuel filter separator installed between the tank and the fuel hose. The separator will automatically shut off fuel flow if excessive water is detected. A filter of this type will, if ruptured, cause water to pass into the fuel hose and subsequently into an aircraft.

Scarey? The helo squadron involved in this hazardous situation thinks so. They are now requiring a visual sample from the fuel nozzle prior to accepting fuel (a standard procedure for shipboard aircraft refueling operations). Without the vigilance of a plane captain performing a correct turnaround inspection, the stage could have been set for a major mishap. — Ed.

Low Flyer NMAC. A TA-4J had just passed over the guided missile cruiser (CGN) with which it was conducting gunnery exercises. The Skyhawk commenced a gentle climb to reverse direction. About one mile past the cruiser, the TA-4J pilot spotted an H-2 which had entered the operating area unannounced. The two aircraft passed within an estimated 300 to 500 feet of each other, no evasive action being taken. Investigation of the near midair revealed that although the helicopter pilot had called in to the local controlling agency and has been advised that the area was "hot" due to the exercise, he thought another area was the designated area and continued on his way.

The H-2 pilot contacted a frigate (FFG) which was operating with the CGN for clearance into the area. The FFG informed him that the exercise was concluded, but failed to tell him the TA-4J was still operating in the area. Acknowledging the information, the helo driver pressed on, approaching the cruiser, rather than the intended frigate. (The ships were operating in close proximity to each other and there were low clouds.) The FFG did not notify either the TA-4J nor the CGN that the H-2 was entering the area.

Abort?! F' Sure!! After applying max power with the brakes set prior to beginning the takeoff roll, the PPC (patrol plane commander) released the brakes and began his takeoff. At 120 knots, the flight engineer called out, "Master de-ice caution light!" And the pilot initiated an abort by retarding the power levers. He then decided to continue the takeoff, when the malfunction was identified as a "leading edge hot" light. After reapplying power, the flight engineer called, "Flameout number one!" The No. 1 engine's E-handle was pulled, and immediate full reverse on the remaining engines was applied. Hard wheel braking was also initiated. The P-3 cleared the runway at the departure end taxiway.

Subsequent investigation revealed that the No. 1 engine had autofeathered. ◄

Although this crew's experience enabled them to get out of a potentially expensive mishap, this wealth of experience should not have put them there in the first place. The aircraft had a history of problems with the leading edge sensor, which perhaps led the PPC to the wrong conclusion. Once the decision to abort had been made, he should have stuck with it. — Ed.

. . . All the stresses caused by caffeine are problems one would probably function much better without, especially when working in an already high-stress occupation such as aviation . . .

"To Caff or Not to Caff?"

Is That the Question?

By Lt. Tom Pokorski, MSC

OH NO, not another sermon on health! What is it that's going to kill me this time? Wait, wait, wait. Before you turn to the next article, take a few minutes to read this one; it may clear up a few things you've been wondering about. After you read this, I don't expect you to reform from anything, just to be a little more knowledgeable on the subject that might be affecting you — caffeine.

Caffeine is a chemical naturally found in several plants that has for centuries been consumed for its stimulant properties. For any chemistry buffs out there, it is a member of the methyl xanthine family. In its pure form, it is a white, bitter-tasting crystal. Like many other substances used by our society today, caffeine used moderately (about 200 to 300 mg per day) should have no detrimental effect on *most* people. I stress *most* because individuals with certain medical conditions should use no caffeine at all. Excessive caffeine consumption, however, can cause problems for almost everyone.

The lethal dose for caffeine is 10,000 milligrams, and you won't reach that level unless you're drinking over 70 cups of strong coffee at one sitting. However, many detrimental effects can be observed at much lower levels of intake. Probably the best-known effect that caffeine causes is that of a stimulant. The person who jokingly says, "I just can't function in the morning until I've had my first cup of coffee" probably sums it up the best. Many overconsumers of caffeine can actually develop a physical need for the drug and will exhibit certain withdrawal-like symptoms if they go without any for a few days. This stimulant effect is not always bad. If used properly and at the right time, the effect can help give you the alertness you might need in a tight situation. However, like any stimulant, the "up" period will always be followed by a certain "down" phase when your body has used all the caffeine in the system. Loss of sleep is another problem which often haunts caffeine abusers.

Caffeine causes the stomach to increase acid secretions which on an empty stomach can be particularly distressing. It is also a diuretic which in layman's terms simply means that the old urine tank reaches the full level faster than it normally would. This can be a big problem on longer flights in some aircraft.

Interestingly, studies have shown that caffeine increases the free fatty acid level in the bloodstream. "So what?" you may ask. Some endurance runners think this can be very beneficial for extra energy toward the end of a race. So if you see some runners drinking small amounts of coffee before a race, you know why.

All the stresses caused by caffeine are problems one would probably function much better without, especially when working in an already high-stress occupation such as aviation.

As stated earlier, caffeine is found naturally in a number of plants. Although it can be produced artificially in a laboratory, most of the caffeine marketed is derived from those plants. The coffee bean is probably the first thing that comes to mind, but caffeine is found in various tea leaves and in the kola nut. Table 1 lists some of the more common products that contain caffeine. Since every study differs to

How Much Caffeine?

Item	Milligrams of Caffeine
Coffee (5 oz)	
Regular brewed	
— Percolated	90 — 120 (depending on strength)
— Drip	100 — 150 (depending on strength)
— Instant	50 — 90 (depending on strength)
Decaf brewed	4
Decaf instant	2
Tea (5 oz)	
Brewed/instant	20 — 80 (depending on strength)
Soft drinks (12 oz)	
Coca Cola	39
Dr. Pepper	46
Ginger Ale	0
Mountain Dew	51
Pepsi-Cola	36
7-Up	0
Sunkist Orange	0
Others	
Water	0
Orange juice	0
Most herbal teas	0
Cocoa beverage (6 oz)	10
Milk chocolate	6
Pain Medications	Milligrams per Tablet
Excedrin	64.8
Vanquish	33.0
Empirin Compound	32.2

Table 1

some degree on exactly how much caffeine is in each product, I've listed an average taken from several sources.

So, what does this all mean? What can you do to prevent caffeine from being a problem? As stated before, most experts tend to agree that less than about 300 mgs of caffeine per day should not be hazardous, for *most* people. But, *you* must decide what is good for *you*. There are ways to control your caffeine intake. First though, you need to know how much you are using. Do this by filling in Table 2 for a typical

Caffeine Count

TIME	PRODUCT	OUNCES	CAFFEINE COUNT
		TOTAL	

Table 2

day. If you decide that the amount is excessive and want to reduce it, here are some guidelines for you. If you drink coffee, decide how many cups you can drink and keep count each day. If you make your own coffee, remember the stronger the brew, the more caffeine.

Decaffeinated coffees are becoming more and more popular nowadays; however, they can cause problems of their own. Most decaffeinating processes use a solvent (trichloroethylene or methylene chloride, among others) to extract the caffeine. These processes can add to or change the other organic compounds in coffee. Another process which seems safer exists in Switzerland, using steam only for extraction. This process, however, is more expensive and the coffee is normally sold only in gourmet stores.

All the caffeine extracted goes into medications or soft drinks that don't originally have caffeine. That's right, a lot of the caffeine in soft drinks is added. So again, if you're looking to reduce your caffeine consumption, watch what kind of sodas you drink. There are a lot of drinks on the market now that contain little or no caffeine.

Probably the best way to cut caffeine intake is to drink something which is naturally caffeine-free. Water is great, but people tend to get bored with it. Most fruit juices are also excellent. Many teas are on the market with ingredients containing no caffeine.

As I mentioned before, quitting caffeine will cause withdrawal symptoms. These symptoms often persist for two to three weeks after the last caffeine intake. They range from drowsiness and irritability to severe headaches. Also reported have been fever, chills, nausea, depression and many others. Many people will treat these symptoms with over-the-counter pain medications which normally will be of no help. However, the extra-strength doses usually contain caffeine and obviously will help somewhat by satisfying the craving. For heavy caffeine users, the symptoms can be quite severe, indicating a real need to stop. These people should see their flight surgeons for assistance in stopping. For these individuals, after they've controlled their caffeine use and the symptoms have passed, they will find they'll enjoy a better quality of life.

So if you're trying to answer the question "To caff or not to caff?" stop and think of these few things and make the decision that is right for you. ◄

Lt. Pokorski is the aviation medical safety officer for Training Air Wing 6, NAS Pensacola, Fla.

. . . Probably the best way to cut caffeine intake is to drink something which is naturally caffeine-free. Water is great . . .

Beware!
The Links

THE squadron had just finished a highly successful three-weeks-at-sea READIEX/ORE period, and everyone was really "up to speed" around the ship. The ship had to pull back out to sea in four days for an inspection, and the captain was going to keep the air wing pumped up by opening up the deck for four days of carrier qualifications. A carrier aviator's dream come true — a BAGEX! When I manned up at NAS Home Plate, it was a beautiful, clear, sunny day with the local weather forecast to be the same.

Forty-five minutes after launch, I was anchored overhead in high-holding waiting to be called down to run the deck, day VFR. An hour later, I had CQ'd until my fuel state was 2.4 at which point I was held down for a hot refuel to return to home plate. By the time the purple shirts finally stopped refueling me, I had 4,500 pounds of fuel — very comfortable for my 280-nm bingo.

I was broken down and ready to taxi up to the cat when Cat 2 went down, reducing the CQ evolution to single catapult operations. As a result, aircraft started to back up on the flight deck forward, locking in the hot pump aircraft. About 15 minutes later, I was finally taxied out and around to Cat 2. Just prior to tensioning, Cat 2 went down again and

s Are Forming

By Cdr. J.P. Sciabarra

"His response really got my attention — the field was IFR with three quarters of a mile visibility in blowing dust."

I was spun out to the end of the line for Cat 1. Finally, I was on Cat 1, in tension, with a fuel state of 3.7. No problem in and of itself, but it was the first link in a mishap chain that had started to form without my knowledge.

Clearing turn, clean up, at seven miles, I commenced my climb for home base. Twenty miles from the ship, departure advised me that a sister squadron aircraft was also returning to base right behind me but had a radio failure. I was instructed to join up with him and lead him back to NAS Home Plate. Again, no sweat — except that this was the second link in the chain. I rogered and set up a rendezvous overhead San Clemente at 17,500 feet while trying to talk to "Beaver" control on my No. 2 radio for IFR clearance into L.A. Center. Fortunately, the no-radio aircraft could receive, he just couldn't transmit. After two turns over San Clemente, the other A-7 was joining, my fuel state was now 3.0 and the 1.5 cushion of fuel had now been cut to zero. I asked Beaver how the clearance was coming and was informed that L.A. Center could not handle me IFR just then. I could either remain in the warning area for IFR clearance at FL260 which I wanted, or continue on VFR at 17,500. My decision to continue VFR was the third link in the chain.

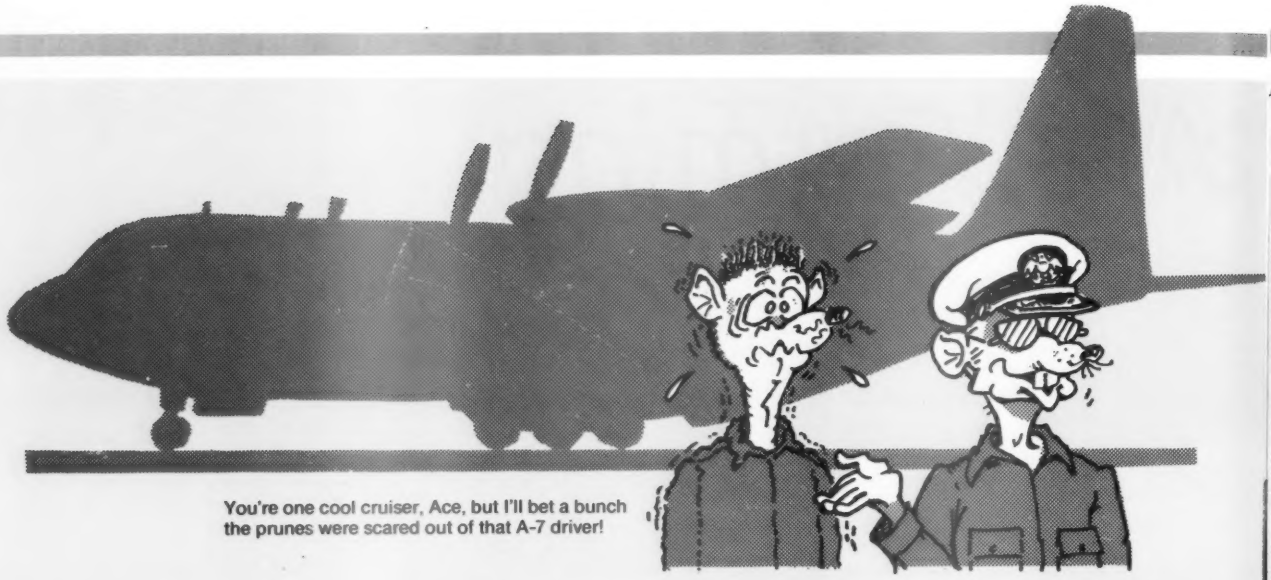
I switched directly to the appropriate L.A. Center frequency for the coastal area and asked Center directly for clearance. They could clear me IFR at FL260 but not direct — their routing would add an extra 25 miles! I accepted the clearance, climbed and pulled out the little blue book. I wanted to confirm what kind of fuel state I would have upon landing. With an idle en route descent to a full stop, I would have 1.2 on deck — not as much as I would've liked, but sufficient. Approaching Lemoore, I tuned up base frequency in my back radio so I could call and let base know that I would be on deck in 15 minutes. Before I could call, however, I heard another squadron aircraft which had just landed call "401 in and up, how long has the *weather* been like this?" Weather! What weather? It had been clear and forecast to stay that way! Besides, there is *never* weather in the valley this time of year. I immediately checked in and queried the duty officer about the weather. His response really got my attention — the field was IFR with three-quarters of a mile visibility in blowing dust. A fourth link in the chain was in place. I was overhead Bakersfield with 1,600 pounds, a partially NORDO wingman and IFR at home plate. During my en route descent, when I checked in with approach, I confirmed that the strobe lights were on and declared minimum fuel. Approach wanted me to drop off the NORDO first, then go around for my GCA.

At this point, I knew that I had set myself, my NORDO wingman, or both up for a mishap. If I dropped him off and took it around, I might flame out in the GCA pattern. But if the NORDO couldn't handle IFR alone, anything else would put him in *extremis*. The chain was almost complete, and this was my last chance to break it.

After confirming that my wingman was hearing all the transmissions, could acknowledge by IFF ident and had a 2.4 fuel state, I told approach to split the flight and take me first. At 20 miles my low fuel light came on with 1.2 on the gauge, and I declared an emergency with low fuel. The strobe lights were visible at one mile and the runway at three-quarters of a mile. After a short eternity, I finally touched down. I taxied to the fuel pits with .8 remaining. To my great relief, I could see my NORDO wingman rolling out on the runway.

Very few mishaps in the aviation community are one-link chains. Almost all of them have quite a few links form before the final link that causes the mishap. It is up to you to break that chain of events *before* the final link is formed.

Cdr. Sciabarra is executive officer of VA-27.



You're one cool cruiser, Ace, but I'll bet a bunch the prunes were scared out of that A-7 driver!

Crowded Runway

A C-12 was cleared to land on runway 7. As soon as the C-12 passed the approach end of the runway, an A-7 at the hold short line was cleared into position and hold and commenced run-up awaiting an immediate release. On final at four miles was a C-130 for a full stop. With the A-7 still in position and holding, the C-130 was cleared to land while still two miles out. The A-7 could not be released until the C-12 had cleared the runway; meanwhile, the C-130 was still approaching and descending.

When the A-7 was released, he then commenced his run-up and started to roll. At this point the LSO on station at the lens made a recommendation that the C-130 go around. The C-130 could not have been more than a half mile from the approach end to runway 7. The recommendation was overridden by the tower and the approach continued. From the LSO position, it looked like the A-7 was still on the deck when the C-130 touched down approximately 1,000 feet down the runway. The A-7 lifted off at about the 4,000-foot remaining mark a second or so later.

This situation had a great deal of potential for a fatal mishap. The fault can be laid at the feet of the tower that cleared a plane to land while another aircraft was still on the runway and not moving, and the relative distance between them was rapidly decreasing. Clearance is normally given to land, once the aircraft on the runway has started to roll. In this case it occurred several seconds, say 10 to 15 seconds before the A-7 began to move. Add the fact that the C-130 was conducting a special mission that night, probably heavy and definitely conducting a low flat approach to the runway and bingo, if the A-7 had taken the second set of arresting gear (the first being derigged for FCLPs), the rest would have been read about in a mishap report. When situations scare an LSO, then maybe the matter should be brought to light and training held to prevent another, possibly more fatal occurrence.

GrayingLSOmouse

Useless PRC Radio

WHAT? — Missing battery in PRC 90 radio.

WHERE? — In a life raft that was pulled from an operational aircraft

Let Anymouse Know. We encourage you to write Anymouse whenever you see "a mishap about to happen." If you know of a hair-raising situation in the air or on the deck, let Anymouse know about it. You may help someone else avoid an unsafe incident.

Anymouse is a unique department in Approach where no names are used. All information is anonymous. In fact, Anymouse was born three decades ago when someone couldn't spell "anonymous" and signed his letter "anymouse." Thus, a mouse wearing flight gear has become a world-wide naval aviation safety symbol.

Over the years we have found it is often more prudent and speedy to report unsafe situations anonymously. Keep in mind, though, that Anymouse is not interested in personality conflicts or non-constructive criticism of individuals. All views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

For your convenience, postpaid Anymouse mailing forms are available in most ready rooms and from most flight safety officers. Use of the form is not mandatory, though. Just jot down your thoughts and mail to Anymouse, Approach Magazine, Naval Safety Center, NAS Norfolk, VA 23511-5796.

ANYMOUSE

(the raft was due for a 210-day inspection) for an operational demonstration during a squadron safety stand-down.

WHY? — Improper maintenance and collateral duty inspections.

HOW? — To prevent this from reoccurring, I would like to put the persons who packed the radio in the raft, and the person who inspected the radio and the raft, in the very same raft and drop them off at sea (about 1,000 miles from the coast) for a couple of days. I'll bet that they would be more careful after that.

We have to instill pride and professionalism in our personnel so that things like this don't occur. If you can't trust a senior man, who can you trust?

Not only was the battery missing, but the lanyard was improperly stowed and tangled.

The squadron has taken the precaution of reinspecting all rafts and radios received from AIMD (aircraft intermediate maintenance department), ensuring that something like this doesn't happen again.

Batteryconsciousmouse

Shock Avoidance

It is squadron policy that s-shops (admin. spaces) and ready room floors be swept, swabbed and buffed, but at what cost.

Recently while serving as SDO, I told the duty clerk to buff the floor. As the clerk was buffing the floor, something on the electrical cord caught my eye. The yellow cord was split about four feet from the buffer's handle.

Upon inspection I found bare wires. The bare wires were flat from being dragged across the floor. The cord had been this way for a long time. Many squadron personnel used the buffer, but no one bothered to check the electrical cord. When the buffer was brought to the electrical shop, the plug was a mess. The grounding blade was missing and one of the electrical prongs was so loose that it would almost touch the other prong. Someone was about to get shocked.

Anyone who uses electrical equipment should check it. If it is found to be defective, report it or fix it. The owners of electrical equipment need to start a preventive maintenance program. We do not need to have anyone electrocuted.

Antishockmouse

Whatcha mean, do I have all my buttons? You're no wiz . . . Wacko!

Button FOD

This in reference to FOD prevention. While doing FOD inspections on aircraft, we found numerous dungaree trouser buttons, probably from the left back pockets.

While maintenance men are working in and around aircraft, their back pocket buttons get hung up and are torn off without personnel noticing it. In turn, FOD is introduced into aircraft.

To prevent this from happening, allow maintenance men to remove these buttons from their uniforms to keep from fodding the aircraft. This problem is probably Navy-wide in the aviation field.

AntiFODmouse

This problem is Navy-wide and has been with us for some time. It was brought up in another Anymouse in the January 1984 Approach through an item entitled "Button, Button, Who Has the Button?" Also, that issue carried a letter to the editor on the subject. We still recommend that maintenance personnel working around aircraft or airfields either have the button stitching reinforced substantially or remove back pocket buttons from dungarees before they become FOD.

ICS Essential

A condition exists in TA-3B aircraft, as well as other A-3 versions, which is longstanding and hazardous. The problem is the ICS (internal communication system).

The TA-3B MESM calls for a functional ICS as a minimum for safe flight. The EA/TA-3B pocket checklist stipulates that the ICS be in "emergency" or "all" for all takeoffs and landings. It has become the accepted norm in the WHALE community not to have a fully functioning ICS. I feel this is careless, foolish and contrary to the spirit of the PCL and MESM.

In certain emergency situations, timely observations from crew members stationed in the aft compartment are vital to the pilot-in-command.

Lack of a back end ICS in an emergency bailout situation could also cause confusion and hesitation on the part of the aft crew member, especially nonessential flight personnel (i.e., nonaircrew, PAX) routinely carried aboard these aircraft. I recently had the unpleasant experience of launching off a catapult at night in the back end without benefit of even one-way ICS. It is a very uncomfortable feeling. When are we going to stop lowering our standards for the sake of convenience and insist on aircraft with functioning systems?

Talkativemouse

Air Traffic Control

By Lcdr. Wayne Aleshire

"F-14 on takeoff — you're on fire. Abort! Abort!"

THE morning air was sweet with a gentle sea breeze, autumn colors were just beginning to signal the end of summer, and the quiet early morning stillness was interrupted by the sound of turbine engines starting. Other than a high overcast sky, it was a great day for flying over the countrysides of Virginia and North Carolina.

After nearly two hours of briefs and aircraft preflight checks, all was ready for departure. Ground control was called:

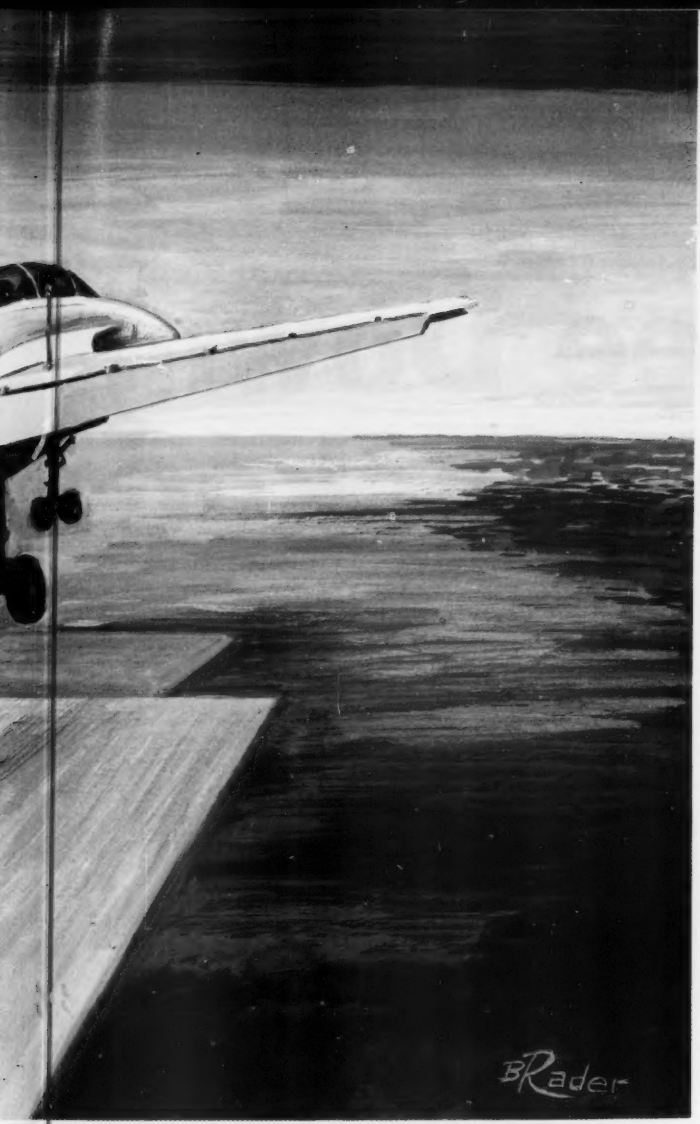
AD500: NAS Ground, Navy AD500, taxi for takeoff with information Alpha.

Ground Control: Navy AD500, taxi runway 5 left, hold short 5 right altimeter 29.92.

AD500: Roger, good morning, sir.

While taxiing out for takeoff, the IFR clearance was received, and the takeoff checklist was completed. Holding short behind a Navy F-14, NAS Tower Control was called:

AD500: Tower, good morning, Navy AD500 is ready for takeoff No. 2.



Tower: Navy AD500, good morning, taxi across 5 right, hold short 5 left.

AD500: Roger, cross the right hold short the left, Navy AD500.

Tower: Navy FG101, change to departure control, monitor guard wind 050 at 12 knots, cleared for takeoff runway 5 left.

FG101: Roger, cleared for takeoff.

A faint roar of the engines, and the F-14 took the duty runway. A last check of the flight controls, power was advanced, afterburner was cut in and the brakes were released. As the afterburners were ignited, a long flame projected about 80 feet from the aircraft.

AD500: F-14 on the takeoff roll, you're on fire, repeat you're on fire! Abort! Abort!

The F-14 accelerated rapidly and was airborne. After two attempts to safely land the aircraft, and approximately five minutes after takeoff, the F-14 crash landed about three miles from the airfield. There were no survivors, and the aircraft was destroyed on impact.

After several weeks of mishap investigation, it was concluded that the aircraft sustained an actual engine fire during a post-maintenance functional check flight.

The question comes to mind: Where could have the link been severed to stop the chain of events that caused this accident? Obviously, the pilot did switch to departure control and did not hear the emergency call by the other aircraft holding short of the runway. Secondly, was guard being monitored, or was it turned off so that the annoying UHF distress signal would not interfere with the pilot's takeoff procedures? Possibly, this could have been a one-time incident, however, a valuable lesson was learned and the possibility of severing that link did exist. Questions arise as to why Navy (military) aircraft must be switched to departure control while taking the active runway at naval air stations for an IFR departure.

The few points that follow are reasons why one should not switch to departure control until safely airborne. It has always been a thrill watching an aircraft making a takeoff or landing, and even more so, the comraderie involved by assisting an individual who may have an emergency. After watching many takeoffs and landings, one gets a relatively good picture of normal operating procedures. Any abnormality would cause one to bring the matter to the attention of the party concerned (i.e., oil leak, flat tire, smoke from an engine, a panel not secured properly, a fuel leak, etc.). Recently, a civil air carrier pilot holding short for takeoff observed and notified another civil aircraft that fuel was leaking under its left wing. After returning to the gate, maintenance discovered a fuel drain had opened and was releasing fuel. A major catastrophe was averted due to the heads-up nature of a fellow airline employee. By maintaining a common link, the tower/ground control frequency, communications between aircrew members and air traffic control at times of distress can easily be accomplished.

Switching to departure control would not allow you to notify the tower of an aborted takeoff or impending emergency, or to hear a warning broadcast to you. A delay of a few seconds switching frequencies could result in an unfavorable situation. Standard operating procedures among general aviation and civil air carriers (airlines) is to establish communications with departure control frequency only after safely airborne. This is usually accomplished between 1,000 to 1,500 feet AGL, after the landing gear has been retracted and climb power is set.

The lessons learned from a one-time incident, coupled with the standard procedures for general aviation and airline operations, signifies the importance of maintaining a common link while operating within the airport traffic area. This common link aided with the watchful eyes of fellow pilots and air traffic controllers would result in better operating procedures within the airport traffic area. ◄

Lcdr. Aleshire is assistant operations officer for VP-91, NAS Moffett Field, Calif. A reservist, he has flown P-3Bs as a qualified aircraft commander since 1982 with VP-91. On the civilian side, he is a first officer with Air California, flying Boeing 737s.

. . . Suddenly I was startled when the right wing dipped lower than normal . . .

Three Down, *Not* Locked

By Bud Baer

WE were on a straight-in visual approach to NAS Midwest. Landing checklist was complete and gear were lowered. Indicators showed three down and locked with no light in the handle. We were cleared to land and made a normal flared crosswind approach. During our T-39's touchdown roll, I felt excessive left aileron input was needed to counter the crosswind. Suddenly, I was startled when the *right wing dipped lower* than normal.

"I think we've got a problem, Joe," I told my co-pilot. "Let's go around."

After liftoff, my first thought was that I had an aileron control problem. I immediately found out this wasn't so with some vital help from an A-7 pilot holding short of the runway. He advised us that our starboard main landing gear appeared to collapse on our touchdown roll.

"I'm not surprised, Joe, are you? Remember the problem we had two days ago when we started our flight en route to CONUS? I've felt uncomfortable with the fix. We had ample warning that something wasn't right. It seems more serious than we thought. Now what are we going to do?

"At least we've got some time to work this out. Let's go around by the tower and let them take a look. Then let's go upstairs, orbit the field and troubleshoot. Get out the NATOPS manual."

We flew by the tower. The controllers reported, "Your starboard main landing gear is not fully down and locked." A mobile observation unit and two A-7s at the approach end of the runway confirmed our predicament.

Clearance was obtained from the tower to climb to 7,000 feet MSL and orbit the field while troubleshooting the gear problem. We searched the NATOPS manual for a possible solution. We still couldn't figure out why the gear indicated three down and locked with no red light in the handle; also, that the center line gear doors were closed.

While circling the field, we asked an A-7 returning from a local mission to join us and take a look at our underside. The

. . . We tobogganed our way 1,450 feet from our touchdown point, somewhat further than we had anticipated . . .

A-7 pilot reported, "Your actuating cylinder is slightly bent and strut is canted 25 to 30 degrees inward from the 90-degree down position. I don't see any leaks, though."

We tried an emergency system drop of the gear. Nothing happened. The next effort involved aircraft maneuvers. Our attempts to yaw, pull positive/negative G s combined with increased airspeed in an attempt to lock the gear down proved futile. We made numerous attempts to cycle the gear, but nothing would budge it.

We were fortunate to have plenty of fuel to perform these various exercises. After about 45 minutes of maneuvering, circling and troubleshooting, Joe and I decided it was about time for the next step — landing this bird in the best way possible, gear or no gear.

"I'm for a gear-up, belly landing, Joe," I said. "I think our chances of getting it down with minimum risk and damage are best in this manner. What do you think?"

Having reviewed NATOPS procedures more thoroughly, Joe concurred that a belly landing was our best choice. The procedure was briefed to the other three occupants on board in preparation for the landing.

I raised the port main and the nose landing gear using the normal hydraulic system. Fuel was dumped to approximately 250 pounds per side without selecting crossfeed. I briefed the crew to remove the emergency egress hatch over the right wing on my command prior to touchdown. (Actually, though, I neglected to give the command and it wasn't removed before touchdown.)

NAS Midwest sprayed the runway area we had selected to land on, and crash crew vehicles were appropriately stationed. Everything was in order for us to do it.

We lined the Sabreliner with the runway on final approach with our port main and nose landing gear fully retracted and the starboard main extended at the canted angle. We were all fairly tensed up, yet confident that we would pull it off successfully. The relatively long-period (almost an hour) we had to try to solve our problem was somewhat draining; yet, we did have time to cover all the bases in our preparation.

We were now only a mile out on the right glidepath. Cooperation from the tower was most helpful and reassuring. Now we were over the end of the runway at about 50 feet. We flared out a few feet above the runway and the feeling of dropping lower than normal without the gear extended seemed ominous.

Touchdown was about 250 feet from the approach end of the runway right on the centerline. We skidded through the derigged Bak-12 arresting gear and toboganned our way 1,450 feet from our touchdown point, somewhat farther than we had anticipated.

So there we were, sitting on the runway with the dust settling. We were lucky so far. No explosion. No fire. We then removed the overwing escape hatch, and all of us quickly scrambled out over the wing and away from the aircraft. Nobody got hurt. Damage to the aircraft was minimal, except a scratched up underside and a flattened starboard gear that wasn't working anyway.

In every emergency you can always learn something and this one was no exception. We scored some brownie points for the quick go-around decision at the outset because it was later determined that the canted right main could not have supported the full weight of the aircraft without the side brace and down-lock pin in the fully down-locked position. If we had landed on our first approach, it might have been disasterous. Our belly-in landing was OK, too.

Now for the not-so-great elements. We should have given the command to remove the emergency egress hatch over the starboard wing before touchdown. The weakest areas of the fuselage on this plane are located on either side of the escape hatch. Any fuselage buckling on impact (which there wasn't in this case fortunately) would probably have occurred in this area and may have prevented opening of the hatch and quick egress in event of fire.

Finally, the starboard main had a notorious reputation on this bird, with 15 discrepancies written and signed off during the preceeding six months. Because of this long, deplorable history involving landing gear discrepancies, it became standard operating procedure to activate the electrical reset button to get the down-locked indication. Maintenance had informed us not to expect this discrepancy to be corrected until the aircraft was to undergo standard depot level maintenance a few weeks downstream.

We all thought we could live with this technical problem. We almost didn't. ◄

Editor's Note: This article brings out a key element that causes mishaps — accepting aircraft with known repeat discrepancies. The aircraft commander signed off on this bird with 15 discrepancies on the right gear recorded during the previous six months. The crew performed inappropriate maintenance on the gear during earlier stops. It became SOP to activate the electrical reset button to get the gear down-locked indication. The aircrew's final effort in dealing with this emergency landing luckily avoided a Class A mishap. Yet, the chain of events that led up to the landing mishap provided ample opportunity for the aircrew to avoid the mishap. The aircraft commander should not have accepted the plane with known repeat discrepancies on the gear. He showed questionable judgment by inadequately troubleshooting the landing gear system and continuing his flight without requesting qualified maintenance expertise to resolve the landing gear problem.

Bud Baer is a staff writer for Approach.

Litter Box

By Lt. Van Gab

IT was another hot, clear day in the humid climate of the Philippine Sea. As I climbed up the boarding ladder to preflight the ejection seat and cockpit, I immediately noticed the FOD in the cockpit: a small handkerchief sitting in the area between the front of the seat and the lower ejection handle, obviously left there by the pilot of the previous flight. As I removed the handkerchief, I realized it was the *same* one I had found in my cockpit during my preflight only two days prior. I stuffed the piece of FOD into my G-suit pocket, completed my preflight and climbed into the cockpit.

After landing, I confronted the owner with the article he had left in the cockpit. He was one of the more senior and well-respected pilots in the squadron. What I expected was some type of embarrassing or remorseful response, such as "Wow, I'm certainly glad you found it before you went flying," or maybe "Shoot, I didn't realize I had lost it." The response I received instead was a calm "Yeah, I know, thanks" as I handed over his hanky. In an attempt to be tactful but not insubordinate, I added that I thought he exhibited sloppy habits by leaving FOD in the cockpit twice now in the past three days. He turned and walked away with no response as if hearing nothing I had said.

Cockpit FOD can be anything: a screw, a knob, a pair of gloves, an improperly stowed approach plate or even personal items such as a camera, a pen or pencil or a handkerchief. From a safety standpoint, I was only concerned when I found the handkerchief the first time. After finding the handkerchief a second time, I was angered by the irresponsibility displayed by this guy for again leaving the piece of FOD in the cockpit. How are we supposed to hold our maintenance personnel accountable for programs such as tool control and FOD prevention when we fail to hold ourselves accountable in these vital areas of aviation safety? In fact, I have found it to be pilots who are more often the violaters of FOD in the cockpit than maintenance personnel.

But mistakes can happen once, maybe even twice. What really bothers me was the pilot's obvious complacency about the whole matter. I can "forgive and forget" past actions, but a complacent attitude tells me something about possible *future* action and that's what worries me.

I hear a lot of pilots discuss what areas they concentrate on most from a safety standpoint during the course of a flight. Some are more critical than others about, say, existing aircraft discrepancies and acceptance of the aircraft. Some pilots point out that they pay more attention than other pilots to the preflight of their aircraft. The list goes on and on, and agreeably, all these areas are critically important.

But the overall safety awareness of any individual (or even a squadron) falls into the weakest-link-in-the-chain theory. That is, even though a person may be "super-safe" in many areas, it is those areas where he is *least* safety conscious or less attentive that will more likely bite him first. Cockpit FOD is, of course, one of those areas, and complacency toward it is just asking for trouble. What does it take to overcome this attitude . . . a short "reminder" article in Approach or an aircraft mishap? I certainly hope it isn't the latter. ◄

Lt. Van Gab is an A-7 pilot with Attack Squadron 27 based at NAS Lemoore, Calif.

On touchdown, the tread fell off the tire, but the tire carcass remained inflated, supporting the aircraft throughout its arrested landing and rollout.

A *Tire*some Matter

By Bud Baer

THE sophisticated A-6E TRAM (target recognition and attack multisensor) Intruder rolled down the runway. It weighed 51,400 pounds at takeoff with a rotation speed of 149 knots. Takeoff was normal with no abnormal indications. Completing a two-hour flight which included a Mk-76 bombing run, the A-6E returned to its base. Upon descending for landing and while performing landing checks, the pilot noted the right main and nose gear down and locked. Left main landing gear, though, indicated *unsafe*.

Passing 220 knots, the pilot placed the flap and slat handle to takeoff position. The Intruder's left main landing gear still indicated unsafe. Also, the stabilizer shift, slats and flaps were in transition on the integrated position indicator. The pilot then saw the backup hydraulic light illuminated and the combined hydraulic gauges indicating 0 PSI. He leveled off at 2,500 feet, advising approach control of his problem.

He saw his left forward main landing gear door was open. Another A-6 confirmed that the left gear was still up in the wheel well and that the tire appeared to be shredded.

Positive and negative G was applied to get it down, but this didn't do it. The emergency gear extension was used. This worked, blowing the gear down and locked, but the tire was trailing tread. The TRAM aircraft took a trap on the runway for a successful, yet somewhat unusual, arrested landing. On touchdown, the tread rolled off the tire, but the tire carcass remained inflated, supporting the aircraft throughout its arrested landing and rollout.

A check after landing showed that a hydraulic line was severed in the wheel well by the damaged tire. The landing gear door apparently closed on the failing spinning tire after takeoff since there were no black rubber marks on the aircraft except inside the left wheel well. It snapped

the rod assembly to the J hook and ripped out the aft door timer check valve and the hydraulic line leading to it.

Increased aircraft weight, coupled with higher takeoff and landing speeds, have brought about a need to improve aircraft tire inspection and maintenance, hopefully to avert such tire problems as that encountered by the A-6E. Also, carrier operations place extra demands on tire maintenance. Section III of NAVAIR Technical Manual 04-10-506 states:

"In many cases tire failures are attributable to material failures and/or manufacturing defects when actually improper maintenance was the underlying cause. Poor inspection, improper buildup and operation of tires in an underinflated or overinflated condition are common causes of tire failure."

At the Naval Safety Center, NAS Norfolk, Va., a considerable amount of work on tire safety is in progress on a continuing basis. For example, Lt. Robert C. Malson and AMCS Edward S. Bell of the Aircraft Maintenance and Material Division make frequent visits to tire facilities. Each has substantial knowledge of tire safety at the squadron level gained through fleet experience and from traveling on periodic safety surveys sponsored by the center.

"A major problem is that squadrons have not been checking the required inflation of aircraft tires based on aircraft weight frequently enough," Malson said. "An underinflated tire on a heavy aircraft can certainly pose a safety hazard. The importance of close inspection and proper maintenance of tires at the organizational level cannot be overemphasized. Warning symptoms on defective tires often can be spotted on preflight, preventing hazardous incidents involving tires."

Bell noted that in reviewing the maintenance requirement cards during safety surveys of various squadrons "we often found that tire pressure was not required to be checked by the plane captain on a daily inspection basis as specified by NA-04-10-506."

The manual directs that tires and wheels shall be examined during each turnaround inspection for damage that may have been caused during or after the previous flight. On daily inspections, tires shall be examined for the following 12 conditions:

- Correct inflation pressure
- Defective or damaged valves
- Installation of valve cap
- Tire slippage
- Extent of tread wear
- Uneven tread wear
- Separations and bulges
- Cuts and embedded objects
- Contact with deteriorating fluids
- Sidewall damage
- Tread damage
- Tire clearance

"We can do more at the squadron level to improve tire safety," said Lcdr. R.R. Ayres of the center's Aircraft Operations Division. "Sure, we can kick the tires before we fly, but that won't help. In addition to insuring that proper tire servicing and inspection procedures are followed on a daily basis, we must make certain that *all* tire failures are reported. In this way we will be able to come up with more realistic corrective procedures, if the need is indicated."

The CFA (cognizant field activity) on the Navy's aircraft tire program is the Special Projects Section, Naval Engineering Support Office, Naval Air Rework Facility, North Island NAS, San Diego, Calif. The problem of proper tire inspection and servicing was also noted by Larry B. Klaasen, supervisory materials engineer of the CFA.

"We have extensive ongoing studies of tire safety, along with the Naval Safety Center," Klaasen said. "We find that one of the major problems is tire maintenance. Tires, both new and rebuilt, sometimes are dangerously underinflated. Rather than use an approved, calibrated gauge to check them on a daily basis, some just look at the tires. They may appear all right; yet a tire with 300 PSI looks just like a tire with 100 PSI."

Klaasen said the Navy has approved use of an Air Force tire to replace the 36-by-11 24-ply-rated tire used on A-6, EA-6B, C-2 and E-2 aircraft. This tire has a higher speed rating of up to 217 knots and is available in the supply system. The tire presently used (NSN 2620-00-834-7441) has successfully passed testing which includes maximum gross weights at takeoff of speeds up to 175 knots.

The Navy along with the other military services, the airlines and industry use many rebuilt aircraft tires at substantial cost savings. For example, the 36-by-11/24 costs $82, compared to $270 new.

"We feel that, all things considered, we can put rebuilt tires against any new tires and come out as well in safety and reliability," Klaasen said. "Navy laboratories continually monitor production rebuilt tires to assure that the fleet receives a satisfactory product."

According to NA 04-10-506, the General Accounting Office and the Department of Defense policy mandates that "aircraft tires will be rebuilt in all cases where economies can be realized without affecting safety of personnel and/or equipment." The manual further states:

"During construction, rebuilt tires are subjected to quality control procedures far more stringent than those imposed on new tires. Unlike a new tire, each high-speed/high performance rebuilt tire receives final nondestructive inspection by laser beam optical holograhic methods. This procedure detects separations, voids and multiple cord fractures within the carcass. Tires containing discrepancies are rejected, thus preventing a failure in the fleet."

Bud Baer is a staff writer for Approach.

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USS MIDWAY
NAVY
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MIDWAY
NAVY

BRAVO ZULU

Lt. D.K. Miller (left) and Lt. R.S. Fowler (right) pose with VAW-115's "Liberty 603."

Lt. R.S. Fowler
Lt. D.K. Miller
VAW-115

After finishing a blue-water ops mission, Lt. Fowler and Lt. Miller entered the break over the USS *Midway* in VAW-115's "Liberty 603." When the landing gear was lowered, a loud "bang" was heard instead of the normal "thump." Miller, the co-pilot, checked the right mainmount and discovered that the wheel was misaligned almost 90 degrees from its normal position. Closer inspection revealed that the lower fitting of the mainmount hydraulic actuator had broken, causing the mainmount to drop uncontrollably, resulting in broken mainmount alignment linkages. After a thorough review of all NATOPS procedures, an "OK" straight-in approach was flown by Fowler with the No. 1 wire as the target wire. Unfortunately, the hook bounced over all wires. Lt. Fowler skillfully controlled the aircraft to prevent it from swerving towards the crowded bow. The right wheel smoked across the deck before "Liberty 603" again became airborne. Another approach was set up by Fowler, and this time he flew a perfect "OK Underlined" pass to a successful one-wire engagement.

The superb airmanship and crew coordination displayed by Fowler and Miller undoubtedly saved a valuable aircraft and its even more valuable crew.

. . .. Through radio contact with squadron personnel back at NAS East, the pilot learned that the leaking substance was "coolanol," a heat transfer fluid used for cooling radar units . . .

Cargo Care is Critical

By Cdr. David L. Gracie

THE transport departed NAS East with a load of passengers and 6 tons of cargo on pallets. Twenty minutes into the flight, a crew member saw liquid leaking from a pallet.

"Looks like we've got a problem," he said to a fellow crew member. "Whatever that stuff is, it's spreading aft under the passenger seats. Let's get some rags to clean it up. Go tell the plane commander."

The liquid's fumes and odor became increasingly strong, irritating the eyes of the cabin crew and passengers. It seemed to build up in intensity. Some of the passengers and crew were now complaining of nausea, headaches, lightheadedness and weakness.

As the flight attendant was wiping up the spill, he suddenly was overcome by the fumes and passed out. Then a passenger also lost consciousness.

"We've got a critical situation back here," a crewman advised the pilot.

The pilot declared an emergency and put his aircraft in an emergency decent. Oxygen masks for passengers and crew came off the ceiling at 22,000 feet.

Following NATOPS procedures, the flight crew went through the cabin smoke and fume elimination checklist. The cabin was depressurized at 10,000 feet which removed the fumes quickly. The clean air and the supplement oxygen from the masks gave immediate relief to all of the passengers and the cabin crew. Fortunately, the stricken flight attendant and the passenger soon regained consciousness.

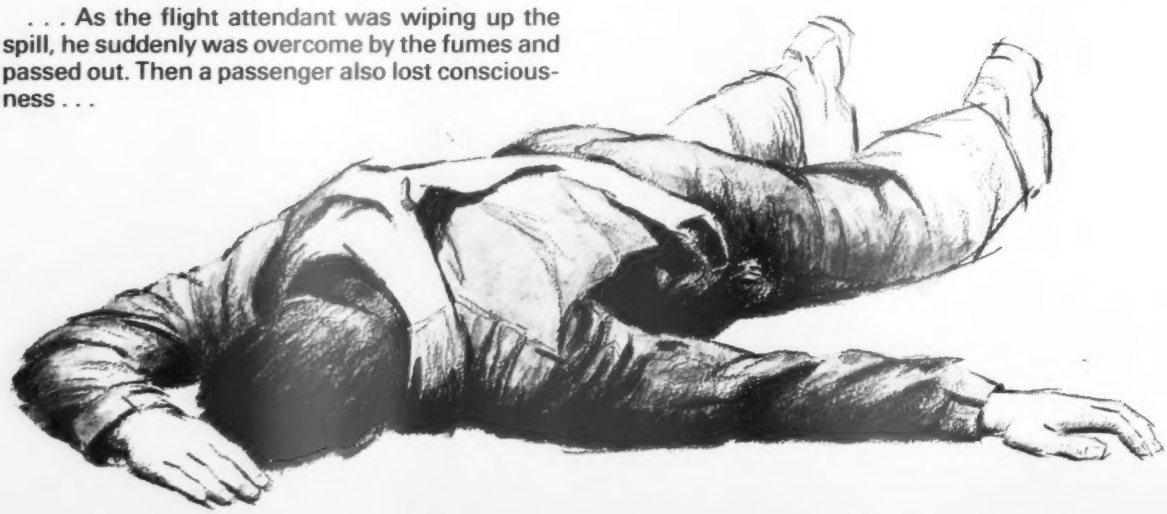
Through radio contact with squadron personnel back at NAS East, the pilot learned that the leaking substance was "coolanol," a heat transfer fluid used for cooling radar units. A quick check of NAVSUPPUB 505 did *not* indicate that this fluid was a hazardous material. In fact, the aircrew had been advised before flight that "the substance is non-hazardous."

"If that stuff's not a hazard," the pilot noted, "I must be in the Army driving a tank. It certainly has our people in the back plenty shook up. I'm heading back."

The plane returned to NAS East where it was met by medical personnel. The passengers and crew were taken to a naval medical facility for physical examinations. None appeared to have suffered toxiological complications from exposure to the leaking fluid. All were released.

The chain of events of this hazardous materials incident was set into motion earlier during the squadron's "pack-up" for a two-week deployment at NAS East. A "fill and bleed"

. . . As the flight attendant was wiping up the spill, he suddenly was overcome by the fumes and passed out. Then a passenger also lost consciousness . . .



Ten Most Hazardous Materials Reported in 1984

1. Propane fumes from gas bottles not secured tightly.
2. Spilled gasoline from jerry cans inside conex box.
3. Smoke grenades and Mk 13 signal flares not packaged or labeled properly.
4. JP-5 fuel leaking from closed cruise box (aircraft defueling hose).
5. Contact cement leaking from cruise box.
6. Radar cooling fluid (coolanol) leaking from fill and bleed unit.
7. Engine oil leaking from jet engine certified to be drained.
8. Diesel fuel fumes from NS2 cart leaking from unpurged fuel tank.
9. Break-free Mil-L-63460B flammable liquid not packaged or labeled properly.
10. Acetylene cylinder leaking fumes.

unit full of the fluid was packed in a conex box. The unit had an improper part installed — a hollow plug instead of a one-way check valve. It was placed upright on its flight to NAS East and arrived without incident. It was not used during the deployment and two weeks later was loaded on the flight to home base. But the conex box was placed on its side rather than upright to make room for other cargo. The hollow plug had allowed the fluid to leak out.

Following the aborted flight and return to NAS East, the pallet was removed from the aircraft and the conex box from the pallet. The "fill and bleed" unit was almost empty. It had contained three-fourths of a gallon of coolanol.

This could have been a disaster if it weren't for the quick and correct action of both the flight and cabin crews. However, this incident could have been averted if the unit was prepared properly for air shipment.

An ironic twist to this incident is that NAVSUPPUB 505 did not specifically refer to coolanol. It lists hazardous materials that require special attention and caution. These must be packaged, labeled and certified in accordance with detailed instructions outlined in NAVSUPPUB 505. This omission in the publication led ground personnel to the mistaken belief that if it wasn't listed, it wasn't hazardous. This is what they advised the flight crew in response to their radio inquiry. (The liquid is listed in NAVSUPPUB 4500, CHIL, describing the substance as "slightly hazardous to health, flammable and corrosive.")

An inquiry about the chemical properties of the liquid revealed that the substance is "a silicated ester, a powerful anesthetic." Picture the grave consequences that could have resulted. If the "fill and bleed" unit had been purged correctly and the conex box labeled properly, there would have been no hazardous materials incident.

Based on this specific hazardous incident and others during the past year, these corrective actions were recommended:

- NAVSUPPUB 505 be updated to include this particular liquid (this is being done) and any others that should be included.
- Only liquids in original and unopened containers should be allowed on logistic aircraft.
- All servicing units should be cleaned and purged of any liquid before being placed on board.
- If a squadron is to perform its own pack-up for deployment, it should ensure that only qualified/certified personnel (preferably at least two) handle preparation of this cargo for shipment.
- Liquid containers should be placed in an approved larger container lined with "vermiculite," a liquid-absorbing material, to prevent leakages from spreading throughout the aircraft.
- COs of units preparing cargo must emphasize the importance of compliance with shipping directives, educate key personnel and hold those personnel responsible as they would a quality assurance inspector.
- Maintenance personnel should receive formal hazardous material shipment indoctrination as part of rate training and during formal maintenance (A and C) schools.
- Consideration should be given to establishing a "hotline" for answering specific questions in transporting hazardous cargo by air, perhaps something similar to Department of Transportation hotline on industrial chemical spills.

Since May 1984, hazardous cargo-related incidents in naval aviation have been reported at the rate of two per month. There have probably been many more that have not been reported or even detected in some instances.

When hazardous materials are airlifted without proper preparation and labeling, the potential for a mishap involving a Navy transport aircraft increases substantially. Don't let this happen in your squadron! ◄

Cdr. "Blackjack" Gracie heads up the Air Operations Branch at the Naval Safety Center. Previously, he was the safety officer and assistant air boss of USS *Carl Vinson* (CVA 70). Most of his earlier assignments were in fighter squadrons where he flew F-4s, A-4s and F-5s. He has accumulated 3,500 hours flight time.

You Look Good in Hypoxic Blue

By Lcdr. D.M. Stanfield

. . . I looked at him and saw a big smile with blue lips. I told him to sit down before he fell down — he was hypoxic . . .

MY crew and I were heading to an eastern Mediterranean deployment site from our homeport in Rota, Spain. Although a fully qualified EP-3E mission crew, today we were mostly passengers, along with some maintenance personnel, in the squadron "truck," a slightly modified UP-3A aircraft.

The crew briefing given by the plane commander was routine, covering everything from forecast en route weather to ditching and bailout procedures. He ensured that all the non-aircrew types were instructed in parachute and flotation gear use. The estimated en route time was five hours.

Takeoff, climb and airway entry were normal, and the crew and passengers settled down to the normal "going on det" routine. While half the passengers slept, the in-flight technician was alert at his starboard aft observer ditching station. I was sitting on the RETRO storage box left over from the aircraft's ASW days. He and I were passing the time discussing some of the administrative details of the detachment.

Three hours after takeoff, my ears started popping, instantly alerting me to rapid cabin pressure changes. About 10 seconds later, fog began to form and the temperature fell rapidly. I immediately yelled, "Rapid decompression! Get out the walk-around oxygen bottles!" Nearly simultaneously, the plane commander announced to the crew, "Beginning rapid descent due to loss of pressurization, don oxygen masks." I looked aft to see if the oxygen bottles were coming, but saw no one back there. Thinking I was the closest, I rushed aft and unlatched the three bottles from their racks and handed one to an experienced crewman sitting hidden from my initial glance at the galley seat. Reaching up for the other two bottles, the fog became extremely thick, and the cabin negative pressure relief valve opened up with a blast of frigid air on my legs. We were at ambient altitude, FL270 or slightly less since we had just begun our descent.

Remembering all my pressure chamber runs, I recalled the hypoxia symptoms: dizziness, confusion, blue lips and fingernails and possible euphoria. During the next four minutes or so, I experienced or witnessed all these symptoms.

The fog became so thick, I couldn't see the crewman to whom I had just handed an oxygen bottle, and I started feeling a little dizzy. I started slowly forward to hand a bottle to another crewman. The fog was quickly dispersing. Handing the bottle to my tech, who was still sitting at his ditching station, I told him to open it and walk it around to give others oxygen. The tech said he didn't think he could.

He had just tried, but he couldn't get up. I told him to take some himself and he would be OK. He nodded, understanding, and proceeded with the plan. I opened the other bottle, checked 100 percent oxygen selected and turned on the regulator. Taking three to four deep breaths, my dizziness subsided.

Meanwhile, in the cockpit, the pilots and the flight engineer put on their smoke masks and sent the extra flight engineer aft to investigate a possible outflow valve failure. The FE rushed past me and quickly disappeared into the doppler well, reappearing in about 15 seconds and said, "Outflow valve is closed, it's OK."

Several crewman were looking around with confused looks on their faces, since we were experiencing mild turbulence due to the rapid descent! The fact that we were sitting down was fortunate, because standing up as hypoxia sets in can lead to disorientation.

Looking aft, I saw the crewman at the galley putting on a smoke mask after hooking up the bottle I had handed him. I told him to unhook the mask, breathe directly from the hose and share with others. I explained that with a smoke mask on, he wouldn't be able to share the oxygen. He probably grabbed the mask in response to the pilot's ICS/PA announcement to "don masks." With only seven walk-around bottles to be shared by all the cabin occupants, smoke masks were not a good idea.

I proceeded forward again, administering oxygen to three or four others. Looking aft, I observed my tech doing the same. At the port overwing hatch, I saw a ground maintenance type sitting up, his head laid back against the bulkhead with his eyes closed. I asked him if he was OK. He replied, "Yes, fine," I gave him four to five deep lungfulls of oxygen and told him to keep his eyes open so I could tell if he had further problems. He said OK and that he was feeling better.

In the cockpit, the plane commander, sitting in the right seat, looked up at the cabin altimeter and misread it as 9,000 feet vice 19,000. He commenced leveling out and removed his oxygen mask. The pilot in the left seat looked at him in bewilderment until the plane commander realized he was getting dizzy and that shouldn't happen at, ahh . . . 17,000 feet! He recommenced the rapid descent and replaced his oxygen mask.

I proceeded forward and saw another experienced crewman with a smoke mask on and hooked up to a walk-around bottle. This bottle was one of four stowed at the forward starboard observer position. As before, I told him to remove the mask and share the oxygen. He immediately complied, offering the hose to the person sitting next to him.

Total time elapsed from first ear-popping to now was about four minutes. The third pilot (3P) was proceeding aft, trying to get by me. I looked at him and saw a big smile with blue lips. I told him to sit down before he fell down and he said, "That's OK, I'm all right. Besides, we're almost below 10,000 feet now." I repeated, this time more sternly, for him to sit down and take some oxygen; he *was* hypoxic. He complied just as the plane commander again came over the ICS/PA and said we were at 9,000 feet cabin altitude and we could secure the use of oxygen.

About five seconds later, the oxygen bottle I was using ran out. Looking aft, I saw my tech administering oxygen to the same maintenance man that I had attended to a minute or so before. After 30 seconds, the man again reported he was OK, and the tech reported, "Good, since this bottle just ran out." Using the bottle in the *emergency* mode, it quickly emptied.

The problem had been caused by a landing gear scissor switch failure. The second flight engineer, after returning to the cockpit from checking the outflow valve, looked out the window at No. 3 engine and confirmed the EDC (engine-driven compressor) had dumped. The starboard EDC was the first to dump after the switch failure, and the cabin altitude rose slowly for about 20 seconds, and then quite rapidly for the next 20 seconds as the port EDC dumped. Rapid descent was commenced, eventually leveling off at 11,000 feet as cabin pressurization was regained.

And now, some Monday morning quarterbacking . . .

— Providing oxygen for 24 people with seven walkaround bottles requires sharing (i.e., three to four per bottle). However, rather than drawing directly from the hose, use of the smoke masks without actually donning is encouraged. By holding the mask snugly to the face, maximum benefit is obtained, especially in a smoke-filled cabin.

— The assignment of designated aircrewmen to perform essential emergency procedures on logistics flights is a must. Other aircrewmen, riding as passengers, should assist as directed or as deemed necessary.

— The location and use of on-board emergency equipment should be included in the planeside brief.

— The vinyl cover over the four forward oxygen bottles has been clearly labeled "OXYGEN" using reflective tape.

— The extreme forward and aft cabin locations, and the limited number of walk-around oxygen bottles (seven) contributed to the distribution delays experienced. A proposal to add three bottles amidships (on the sonobuoy storage rack) has been submitted. The additional bottles will facilitate safer, more efficient distribution of oxygen to the increased numbers of people carried in the VP-3A.

— The importance of minimizing delays in correctly analyzing and executing procedures in accordance with NATOPS cannot be overstated. Any delays in this scenario could easily have had more serious consequences for the passengers and crew in the cabin. ◄

Lcdr. Stanfield is a senior electronic warfare evaluator (SEVAL) with Fleet Air Reconnaissance Squadron 2 (VQ-2). The title of this article was derived from comments by the second flight engineer about the third pilot. He said in his post-incident statement, "Lt. ..... looks good in hypoxic blue."

. . . At this point, those most dreaded of words in all naval aviation flashed before the eyes of both crewmen — "great Jumping Jehoshaphat!" . . .

Keep Your Options Open, or Else

By Cdr. H.D. Connell

THE eager new A-7 CAG LSO had just completed A-6 cross-training when his A-6 outfit was scheduled for CQ refresher aboard *Lexington*. As part of a "good deal" for waving the Intruders aboard ship and for qualifying the squadron LSO, CAG Paddles was scheduled to ferry one of the uglies to Pensacola. What a deal: bag three or four hours of no sweat cross-country time and miss the overnight C-118 hop with the maintenance det.

All was set the day prior to the det, with excellent winter weather forecast for the trip, a detailed planned and refresher brief with the OPS Officer and yet another freebie for Paddles: a one-hour GCA/FCLP warm-up hop. The airlift departed that night with troops and switch pilots aboard. The preflight brief at 0600 left plenty of time for Paddles and his trusty bombardier to review procedures and the boldface before the 0900 takeoff. Only 11 hours of A-6 time, but no sweat, just a routine cross-country.

Eight hours of sleep and one fast moving cold front later,

the Corsair driver-cum-Intruder jock arrived for the brief, blissfully ignorant in the predawn darkness of the big news of the day, that weather for the 3 ½-hour trip would be IFR most of the way. Departure at NAS NW was calling for 400/1, with tops at 4,000. En route conditions of 3,000/3 would terminate with 2,000/3 at Pensacola. Not exactly terrifying weather for a salty second-tour attack pilot, but Paddles swallowed a good deal of pride, captured the CO in his office and volunteered that he'd understand if the squadron wanted to bump him for a more qualified pilot in light of the new weather. "No sweat," said the CO, "your refresher yesterday was 4.0, the weather is supposed to improve . . . and, besides, all of my spare pilots left last night on the airlift. You're it."

Basking in the CO's obvious confidence and eager to show his newly acquired medium attack stuff to his air wing mates, Paddles returned to the ready room to get on with it. Some quick thinking by the squadron OPS officer had arrived at some accommodations with the turncoat weatherman. Now crewed with the outfit's absolute saltiest B/N, Paddles was instructed to pad the plan on the side of safety. If a metro check halfway across indicated Pensacola below VFR minimums, the flight would shoot several practice approaches and land at a midwest AFB, refile and then press on to the gulf coast with a fat fuel reserve which would permit a weather divert virtually anywhere.

A piece of cake, thought Paddles. A little IFR work is no big deal, but if the skipper wants that much protection for his star, I'm happy to oblige and take the easy way out. No sweat.

The flight across the continent was a dream, with an IFR departure worthy of textbook publication, a sweet inertial system and en route weather mostly VFR. At the halfway point, ahead of the fuel ladder, the gulf coast was 3,000/3. Let's go for it; no sweat.

A prepenetration check with metro confirmed Pensacola holding at 3,000/3 with diverts the same. With fuel looking good, an en route descent was commenced. Thoughts of a fleet break, routine landing and quick trip to the oyster bar filled each man's mind. Sheer pastry.

The switch to approach control at 25 miles was like a switch to another world, with the sequence controller asking the aircraft ahead to state his arrestment intentions with standing water on the runway. Say, What?! The attentive crew learned that the field was now 400/1 with isolated heavy rain showers in the vicinity. So much for the good news. The bad news was that conditions would not change for the next half hour and that all area diverts would be about the same. Well, OK. Not as sweet as they had hoped, but certainly still workable. The crew elected to press on to Pensacola, since the closest VFR field was 200 miles away. Paddles noted that "Old Salty" over in the right seat was considerably more active now, but effusive with his assurance that their recovery would be no big deal.

After 10 minutes of unplanned low altitude holding while the two airplanes ahead trapped, things got considerably more interesting. Primary and divert weather had both deteriorated to 300/1/2 in rain. An added bonus was failure of the windscreen defog system on the B/N's side, leaving only a 10 by 10-inch porthole to the real world on the pilot's side. About now, things began to get *real* active over in the right seat. OK, OK, it's tougher than we planned, but shucks, he'd been down to 200/1/2 plenty of times in his trusty Corsair. How much tougher could it be in the Intruder?

The dulcet tones of the final approach controller calmed things down for a while . . . until he advised that the field was now 200/1/2, intermittantly 100/1/4 in driving rain. At this point those most dreaded of words in all naval aviation flashed before the eyes of both crewmen — "great Jumping Jehoshaphat!" How had we gotten into this mess Paddles thought — a pilot with only a handful of hours in type, a B/N who can't see outside, the field at absolute minimums and no divert within range? This had better work out or we're all going to be in very deep kimchee.

The bombardier was almost sitting in the pilot's lap to have a hope of seeing the runway environment, "In the unlikely event old Corsair-breath can even get it down to MDA." A smooth GCA controller and more luck than he deserved, brought Paddles into a ragged, but effective short field trap. The taxi to the line to meet a hand-wringing squadron CO was absolutely uneventful. No sweat after all.

The crew got to the oyster bar all right, but most of the conversation dealt with a recap of their en route decision-making rather than planning any alpha strike to TJ's later on. A series of options, each freely elected, but each causing an ever narrowing chance of mission success, had followed them across the continent, all the way from when the flight schedule was signed to acceptance of low holding when the runway was fouled for arrestments. Each decision to reject an increased margin of safety was followed by unforeseen conditions of increasing difficulty, resulting ultimately in a list of options critically narrow at the destination.

The moral? Keep your options open. Avoid choices that narrow your chances for success later on when Murphy intervenes. Don't get boxed in over concerns for operational expediency or aviator ego. *Perhaps* you'll hack it in the end, *perhaps* everything will work out, but what if it doesn't?

Cdr. Connell is commanding officer of VA-27 based at NAS Lemoore, Calif.

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CG FMFLANT

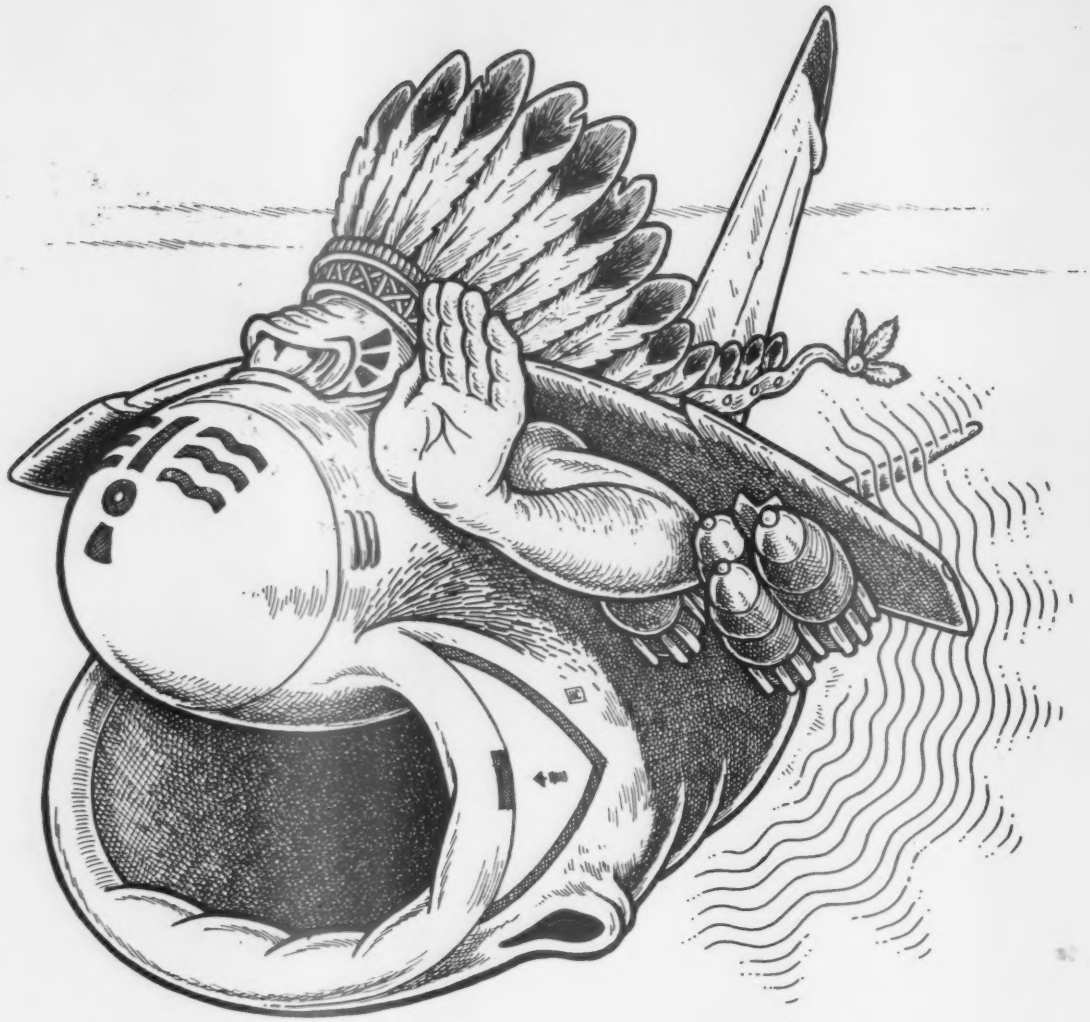
COMNAVAIRSYSCOM

Man
never stood so tall
as when
he stooped
to pick up
a piece of FOD.

(with apologies to the Shriners)

Poster idea contributed by Maj. Paul F. Donohue, USMC, VMA(AW)-224

Indian Noises



Wise old Sagamore say:
Listen to Injun sounds!
If pony make 'um noise, get'm back to teepee. PRONTO, TONTO!

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Naval Safety Center
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